Iowa Science Teachers Journal

Volume 9 | Number 1 Article 20

1971

Two-Billion-Year-Old Algae

In this age of ecology, there is a need to develop an acute sense of environmental awareness in young people. In this connection, there is a need for educational materials and experiments that can be effectively and easily used in the science classroom at the pre-college level. I hope that experiments like the one described in this article will make a small contribution to that effort.

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Two-Billion-Year-Old Algae

Fossil evidence that blue-green algae much like those that exist today existed as much as two billion years ago has been found on a knoll near Eveleth, Minnesota. Blue-green algae are among the world's most primitive organisms; they are not much more advanced than the most primitive bacteria. Yet the Eveleth samples appear to be very similar to the blue-green algae that help clog today's eutrophying ponds. They are among the world's earliest identifiable life forms, and the Minnesota fossils, says Dr. Preston Cloud, a biogeologist at the University of California at Santa Barbara, are the oldest demonstrable examples yet found.

The Minnesota fossils appear to be "slightly older—probably not more than a few million or tens of millions of years," than now-famous Gunflint microfossils from the north shore of Lake Superior, the oldest that could up to now be confidently identified, says Dr. Cloud.

"But the real significance is not the age," says Dr. Cloud, whose research is supported by the National Science Foundation and the National Aeronautics and Space Administration. "They are not all that much older than the Gunflint fossils."

In contrast to the Gunflint microfossils, however, the fact that they are readily separable from the rock deposits in which they occur permits a comparison with living organisms with a precision and detail not heretofore possible.

If, thanks to fine detail like that seen in these fossils from the Pokegama strata in Minnesota, evolutionary changes can be detected in blue-green algae, he suggests, then perhaps they can be used to identify the relative ages of strata in which they are found.

Older microfossils have been reported, says Dr. Cloud, going back some 3.2 billion years or more. But he feels that those are still open to scientific question; the Pokegama and Gunflint fossils, he says, are the oldest ones that can be called relics of early life with 100 percent certainty.